

StorCase® Technology
Data Silo®
DS320

External SCSI
Expansion Chassis

User's Guide

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DS320
External SCSI
Expansion Chassis

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Part No. D89-0000-0115 B02 June 2003



StorCase Technology, Inc.
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Fountain Valley, CA 92708-9885
Phone (714) 438-1850 Fax (714) 438-1847

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STORCASE TECHNOLOGY, Incorporated ("StorCase") warrants that its products will be free from defects in material and workmanship, subject to the conditions and limitations set forth below. StorCase will, at its option, either repair or replace any part of its product that proves defective by reason of improper workmanship or materials. Repair parts or replacement products will be provided by StorCase on an exchange basis, and will be either new or reconditioned to be functionally equivalent to new.

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To obtain warranty service, the defective product must be returned to your local authorized StorCase dealer or distributor, or, with prior StorCase approval, to the StorCase factory service center.

For defective products returned directly to StorCase, a Return Material Authorization ("RMA") number must be obtained by calling StorCase Customer Service at (714) 445-3455. The RMA number must be prominently displayed on the outside of the return package. Shipments must be freight-prepaid and insured, and must include the product serial number, a detailed description of the problem experienced, and proof of the original retail purchase date. Products must be properly packaged to prevent damage in transit. Damage resulting from improper packaging will not be covered by this warranty. The StorCase factory service center is located at 17650 Newhope Street, Receiving Dock, Gate #4, Fountain Valley, CA 92780, U.S.A.

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Declaration of Conformity

Company Name: StorCase Technology, Inc.

Corporate Office Address: 17600 Newhope Street
Fountain Valley, CA 92708

Manufacturing Address: 17600 Newhope Street
Fountain Valley, CA 92708

Product Name: Data Silo DS320

Model Number: DS320-XX/X

Conforms to the following standards:

EMC Directives: EN 50081-1: 1992 Generic Emission
(89/336/EEC) - EN 55022/CISPR22 Class B
EN 50082-1: 1997 Generic Immunity
- EN 61000-4-2 - EN 61000-4-5
- EN 61000-4-3 - EN 61000-4-6
- EN 61000-4-4 - EN 61000-4-8
- EN 61000-4-11

Low Voltage Directive: EN 60950
(73/23/EEC)

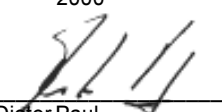
Safety Standards: CAN/CSA-C22.2 No. 950-95
CSA (NRTL/C) UL 1950

TUV EN 60950: 1992 EN 60950/A2: 1993
EN 60950/A1: 1993 EN 60950/A3: 1995

EMI Standards: FCC Part 15, Class B

EMC Standards: AS/NSZ 3548 Information Technology Equipment

Year of Manufacture: 2000

Signature: 
Full name: Dieter Paul
Position: President

Important Safety Instructions

1. Read all these instructions.
2. Save these instructions for later use.
3. Follow all warnings and instructions marked on the product.
4. Do not use this product near water.
5. This product should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
6. Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage points or other risk. Refer all servicing to service personnel.

Wichtige Sicherheitshinweise

1. Diese Hinweise sollten vollständig durchgelesen werden.
2. Diese Hinweise für einen späteren Gebrauch aufbewahren.
3. Allen auf dem Gerät angebrachten Warnungen und Hinweisen folgen.
4. Das Gerät nicht in der Nähe von Wasser verwenden.
5. Das Gerät nur mit dem Aufkleber bezeichneten Netzspannung betreiben. Bei Fragen über die Art der Netzspannung sollte der Händler oder das Energieversorgungsunternehmen zu rate gezogen werden.
6. Nicht versuchen das Produkt selbst zu reparieren. In allen Produkten existieren gefährliche elektrische Spannungen. Nicht das Gehäuse öffnen.
7. Wartungsarbeiten nur von qualifizierten Kundendienstpersonal ausführen lassen.

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Please check the StorCase web site at <http://www.storcase.com> or contact your StorCase representative for the latest revision of this document.

INTRODUCTION

Packaging Information

The StorCase Technology Data Silo® external expansion chassis is shipped in a container designed to provide protection and prevent damage during shipment. The Data Silo was carefully inspected before and during the packing procedure at the factory. Evidence of any damage to the Data Silo should be reported to the shipper immediately.

If the wrong Data Silo model has been received, please call your reseller or StorCase at (800) 435-0642 to arrange for a Return Material Authorization (RMA). StorCase cannot accept returns which do not display an RMA number on the outside of the package. Return the unit with all the original packing materials.

Before removing any component from its packaging, discharge any static electricity by touching a properly grounded metal object.

Serial Number

The Data Silo is labeled with a serial number. This number must be reported to the StorCase Customer Service Representative in order to receive a Return Material Authorization (RMA) for warranty claims. Locate the serial number label and record the number in the space provided below.

Serial Number:

General Description

WARNING: The DS320 contains NO USER SERVICEABLE PARTS inside the unit. Refer ALL servicing to qualified service personnel!

The StorCase Technology **Data Silo® DS320** expansion chassis provides rugged and reliable housing for SCSI storage devices. The DS320 is designed to support 3.5" and 5.25" form factor, full-height, half-height, and low profile (1" high) removable media devices. The DS320 can house Data Express® removable drive enclosures as well.

The DS320 is available in a rack mount, dual bay configuration (Figure 1). Each chassis is constructed of rugged steel and is equipped with one (1) 65W auto-ranging power supply, chassis status LED, SCSI ID select switches, two (2) adjustable-speed blowers, and all necessary internal wiring and drive mounting hardware.

The DS320 can support single or dual-host interfaces and is prewired with either 50-pin Microminiature (HD50), 68-pin High Density, and 68-pin VHDCI (Ultra320) rear panel connections.

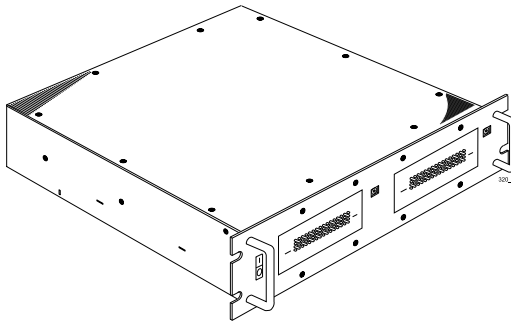


Figure 1: Data Silo DS320

This User's Guide describes the steps required for installing drive(s) into the DS320 external expansion chassis.

This guide is intended to supplement documentation provided with the host computer system, the operating system, and the drive(s) to be installed within the DS320.

Front Panel

(Figure 2)

- **Chassis Status LED/Audio Indicator** - Provides the following operating information:
 - GREEN = Steady glow indicates power ON
 - RED = Flashing indicates Fan Failure (alarm will sound)
- **SCSI ID Select Switch(es)** - Provide SCSI ID selection. The Data Silo uses two (2) rotating switches (refer to "Selecting the SCSI ID Number" for additional information).
- **Device Fault LED** - Provides a visual indication of the status for each installed drive. This LED is housed in the removable filler panel(s) and provides connectors which can easily be attached to the installed drive(s) within the chassis.
- **Device Activity LED** - Provide a visual indication of drive activity. This LED is housed in the removable filler panel(s) and provides connectors which can easily be attached to the installed drive(s) within the chassis.
- **Removable Filler Panel(s)** - Accommodate up to two (2) low-profile or half-height devices.
- **Chassis Handle(s)** - Provide a sturdy grip for the installation and removal of the rack-mount chassis.
- **Power Switch** - Rocker switch controls power to the DS320 chassis.

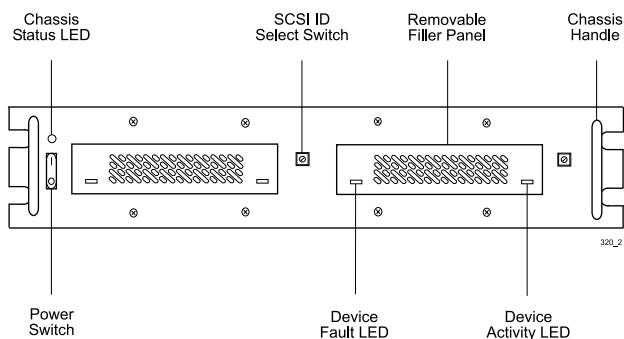


Figure 2: DS320 Front Panel

Rear Panel

(Figure 3)

- **SCSI I/O Connector(s)** - The DS320 is available with 50-pin MM (HD50), 68-pin HD, or 68-pin VHDCI connections. Up to two (2) SCSI channels can be supported.
- **Blower(s)** - Two (2) blowers provide ample chassis ventilation (11.3 CFM each).
- **A/C Power In** - Accepts U.S. and other available international standard power cables. Contact StorCase for ordering information.
- **Fan Speed Selector Switch** - High and low speed. High speed (factory-default) is recommended for high performance (10K RPM and higher) drives.

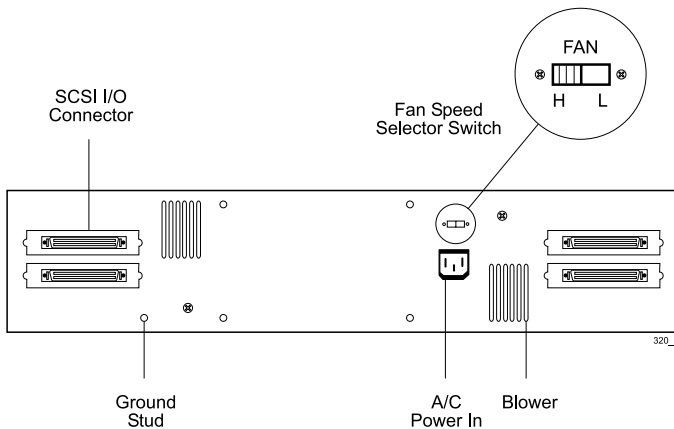


Figure 3: DS320 Rear Panel

INSTALLATION

Installing the Drive(s) into the DS320

While performing the steps in this section, work on a soft surface to prevent excessive shock to the drive(s) being installed. Also refer to the manufacturer's documentation provided with the drive(s). A #2 Phillips and a flat blade screwdriver will be required.

Removing the Access Panel

WARNING: Remove ALL power from the DS320 before removing the access panel. The DS320 contains NO USER SERVICEABLE PARTS inside the unit. Refer ALL servicing to qualified service personnel!

1. Unplug the DS320 and verify that ALL cables have been disconnected.
2. Place the DS320 on a soft clean surface to protect the finish of the chassis.
3. Remove the ten (10) screws located on the top of the unit (Figure 4).
4. Remove access panel by carefully lifting the panel off the chassis.
5. To reinstall panel, simply reverse the above mentioned steps.

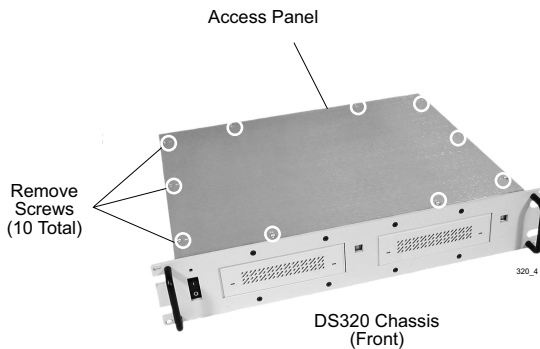


Figure 4: Access Panel

Drive Preparation

1. Remove the drive from its protective packaging.
2. **SCSI Drive Termination** - The last drive on any SCSI channel must have termination enabled. In most instances, depending upon cable configuration, termination will be handled by an external terminator on the DS320 back panel. If using an external terminator, disable onboard termination. Refer to the documentation provided by the drive manufacturer for the location of these terminators or jumpers. External active termination is recommended for best SCSI performance (terminator not included with the DS320).

Removing the Drive Bracket

NOTE: Removal of the access panel (Figure 4) and drive bracket (Figure 5) is required in order to install the drive(s). Once the drive(s) are installed into the bracket, the entire drive/bracket assembly can then be installed into the chassis.

1. Remove the access panel (Figure 4).
2. Remove the four (4) screws securing the drive bracket to the chassis (Figure 5).
3. Remove the drive bracket from the chassis by carefully lifting the rear of the bracket out first.

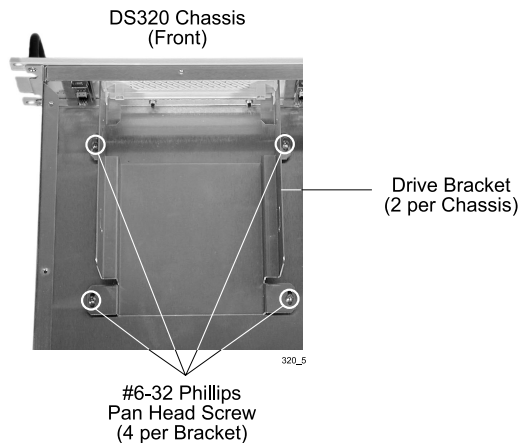


Figure 5: Removing the Drive Bracket

Installing the Drive into the Bracket

NOTE: Removal of the filler panel(s) is recommended for the installation of the drive(s) into the drive bracket.

1. Carefully remove filler panel(s) by applying pressure to the tabs with the tip of a flat blade screwdriver (Figure 6).

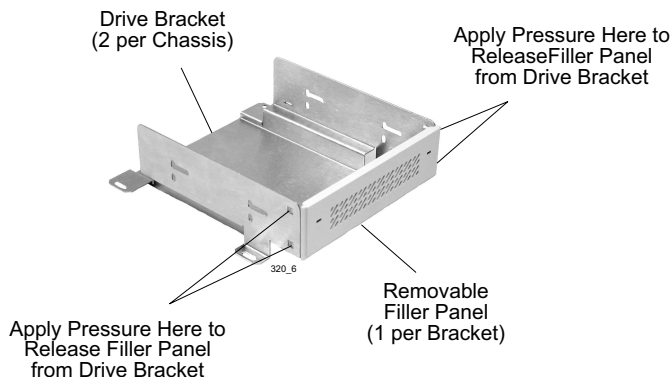


Figure 6: Removing the Filler Panel

2. Install the drive(s) into the drive bracket. If installing 3.5" devices into the DS320, attach the 3.5" adapter brackets (included) to the drives before installing them into the drive bracket (Figure 7). Drive(s) must be side-mounted to the drive brackets using the provided #6-32 Phillips screws (Figure 8).

NOTE: Do not fully tighten the screws that fasten removable media devices into the drive bracket at this point. The screws should be tightened *after* the drive bezel clearance has been checked with the chassis bezel.

3. After the drive has been installed into the drive bracket, carefully insert the drive bracket assembly into the chassis.

NOTE: Make any adjustments necessary to the drive(s) to ensure a good fit between the drive bezel and the chassis bezel at this point. Tighten screws after necessary adjustments have been made.

4. Secure the drive/bracket assembly to the chassis with four (4) screws (Figure 9).

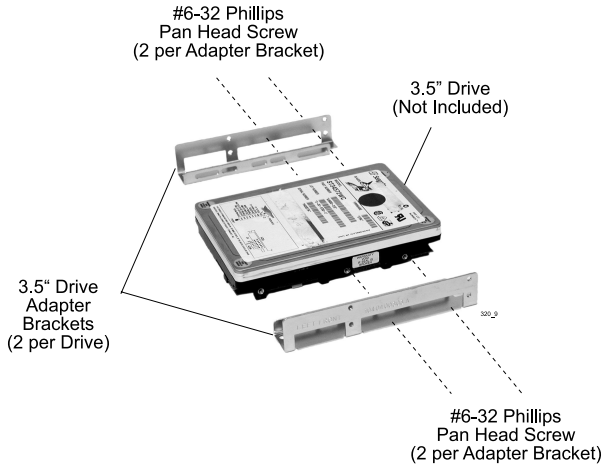


Figure 7: Attaching the 3.5" Adapter Brackets to the Drive

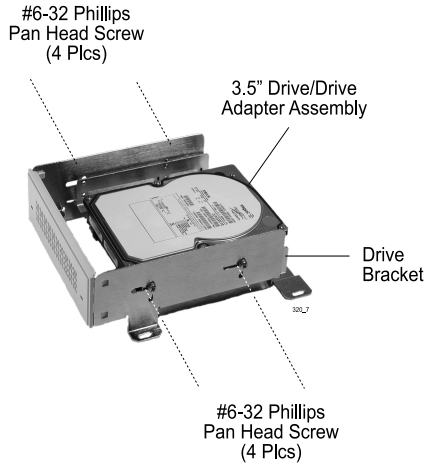


Figure 8: Installing a Drive into the Drive Bracket

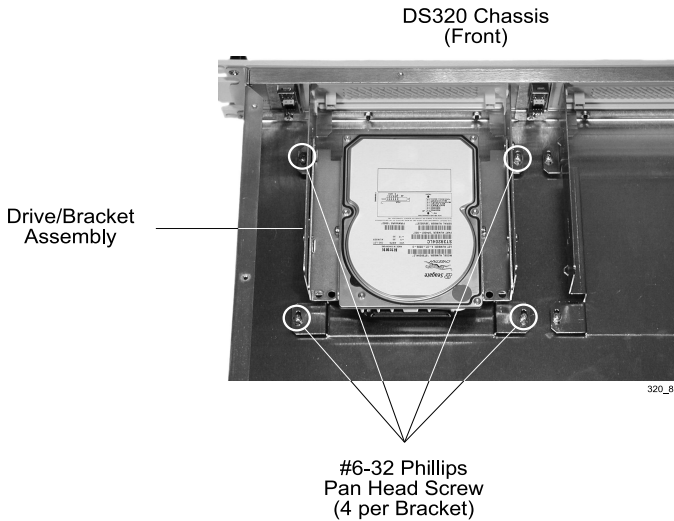


Figure 9: Installing the Drive/Bracket Assembly into the Chassis

5. Connect the I/O cable(s) to the drive(s). Verify that the Pin 1 indicator on the cable is properly aligned (refer to the drive manufacturer's documentation for more information).
6. Connect the 4-pin DC power cable(s) from the DS320 to the drive(s).
7. Reinstall the access panel and fasten all screws.
8. Connect the AC power cable to the DS320 and turn on power. Should there be any unusual sound, turn the DS320 OFF immediately. Disconnect the power cable and remove the access panel to locate the source of the problem.

Selecting the SCSI ID Number

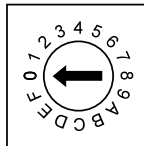
The SCSI ID is an address number (0-7 for 8-bit protocol and 0-15 for 16-bit protocol) that is assigned to each SCSI device. Each device in the chain must have a unique SCSI ID number. SCSI ID 7 is usually reserved for the host controller. If the computer system is already equipped with internal or external SCSI storage devices, some ID numbers will already be reserved. For instance, if the computer system came with an internal SCSI hard drive, it may be designated as SCSI device 0 (refer to the computer system documentation for additional information).

Two (2) SCSI ID selection switches are located on the front panel of the DS320 enclosure (Figures 2 & 10). These rotating switches can be adjusted with the provided alignment tool.

Carefully select the appropriate SCSI ID number(s) for the installed device(s). Note that some switch settings may be invalid for your interface type. Selecting an invalid ID number, or selecting the same number on different devices may cause unpredictable results and the computer system may not recognize the installed device(s). If the computer system can not recognize the boot disk, the computer system may fail to properly start-up.

SCSI ID SELECTION SWITCH

Rotating Switch



Use Alignment Tool
(Provided)
to Set SCSI ID

SCSI ID SELECTION SETTINGS

0 = ID0	8 = ID8
1 = ID1	9 = ID9
2 = ID2	A = ID10
3 = ID3	B = ID11
4 = ID4	C = ID12
5 = ID5	D = ID13
6 = ID6	E = ID14
7 = ID7	F = ID15

Some SCSI unit ID numbers on the selection switches may be invalid for your interface type. Valid 8-bit ID numbers include 0-7. Valid 16-bit ID numbers include 0-15 (Do not use ID7. It is usually reserved for the host).

0636a

Figure 10: SCSI ID Selection Switch

IF INSTALLING AN 8-BIT SCSI DEVICE:

The unit ID cable contains **black**, **brown**, **red/black**, and **orange** wires. Attach three (3) connectors from the SCSI ID select cable to the appropriate 2mm drive pins (Figure 11). The fourth (orange) wire is not used for the 8-bit installation.

The single **black** wire plugs into the drive pin used to select ID1, the **brown** wire plugs into the drive pin for ID2, the **red/black** wire plugs into the drive pin for ID4. The **orange** wire is not used for this interface.

In most cases, the drive manufacturer labels each pair of SCSI ID select pins in significant bit order (0, 1 and 2). One row of drive pins is the signal row, and one row is designated for ground (refer to the drive manufacturer's documentation for specific pin configurations).

The Data Silo ID select cable provides 2mm, 2-conductor drive connectors. A single wire attaches to one side of each connector (with the exception of the red/black connector). The cable side of each connector must align with the signal pin on the drive. On the red/black connector, the red wire aligns with the signal pin on the drive and the black wire aligns with the ground pin.

NOTE: Some versions of the Data Silo have a reversible ID select cable. This cable may be attached to either 2mm or 1.25mm drive pins.

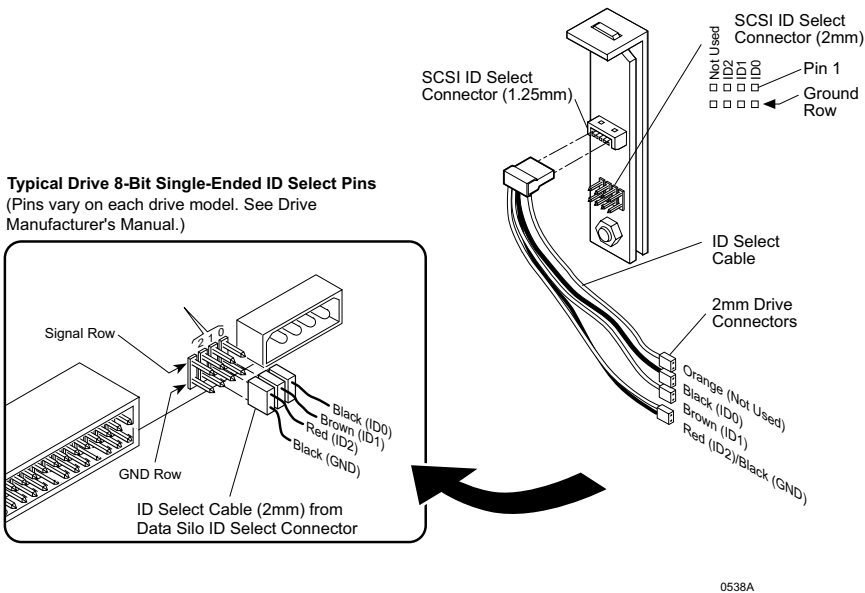


Figure 11: 8-Bit SCSI ID Cable Connection

IF INSTALLING A 16-BIT SCSI DEVICE:

The unit ID cable contains **black**, **brown**, **red/black**, and **orange** wires. Attach four (4) connectors from the SCSI ID select cable to the appropriate 2mm drive pins (Figure 12).

The single **black** wire plugs into the drive pin used to select ID1, the **brown** wire plugs into the drive pin for ID2, the **red/black** wire plugs into the drive pin for ID4 and the **orange** wire plugs into the drive pin to select ID8.

In most cases, the drive manufacturer labels each pair of SCSI ID select pins in significant bit order (0, 1 and 2). One row of drive pins is the signal row, and one row is designated for ground (refer to the drive manufacturer's documentation for specific pin configurations).

The Data Silo ID select cable provides 2mm, 2-conductor drive connectors. A single wire attaches to one side of each connector (with the exception of the red/black connector). The cable side of each connector must align with the signal pin on the drive. On the red/black connector, the red wire aligns with the signal pin on the drive and the black wire aligns with the ground pin.

NOTE: Some versions of the Data Silo have a reversible ID select cable. This cable may be attached to either 2mm or 1.25mm drive pins.

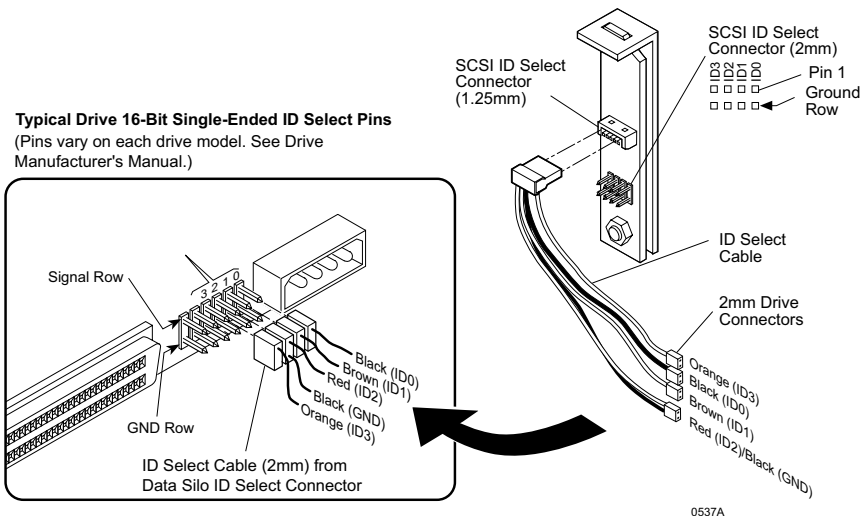


Figure 12: 16-Bit SCSI ID Cable Connection

APPENDICES

Appendix A - Specifications/Dimensions

SCSI Data Silo chassis conform to the Small Computer Systems Interface (SCSI) Standard set by the American National Standards Institute (ANSI). The following DS320 specifications and dimensions are provided for reference only.

Environmental Specifications		
	Operating	Storage
Ambient Temperature	0° C to 50° C	-45° C to 75° C
Relative Humidity ⁽¹⁾	10% to 80%	10% to 90%
Altitude	-1000 to 50,000 ft	-1000 to 50,000 ft
	-304m to 15240m	-304m to 15240m
Shock ⁽²⁾	10g	60g

⁽¹⁾ Non-condensing with maximum gradient of 10% per hour

⁽²⁾ 11 msec pulse width 1/2 sine wave

Physical Specifications	
Height	3.35" (85.1mm)
Width	16.92" (429.8mm)
Depth	14.00" (355.6mm) ⁽¹⁾
Weight	16.0 lbs (7.27kg)

⁽¹⁾ Includes front bezel

Electrical Specifications	
(1) Auto Ranging 65 Watt (112W Peak*) Power Supply	
AC Input	100VAC - 240VAC, 50-60Hz
DC Output Continuous	5V at 3.5A, 12V at 4A

* 5 sec. maximum

Chassis Reliability/Maintainability	
MTBF ⁽¹⁾	500,000 Hours
MTTR ⁽²⁾	5 Minutes
Preventive Maintenance	None

⁽¹⁾ MTBF = Mean Time Between Failure

⁽²⁾ MTTR = Mean Time To Repair

Fan Air Flow	
Total for 2 Blowers	22.6 CFMs

320_specs

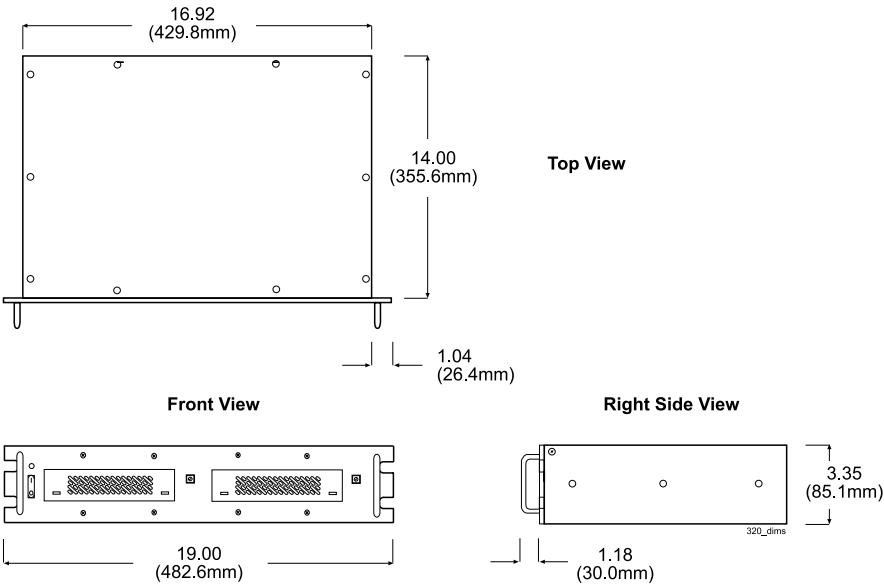
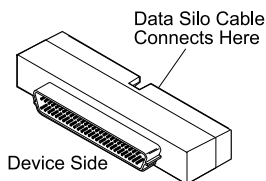


Figure A-1: DS320 Physical Dimensions
(Dimensions are for reference only)

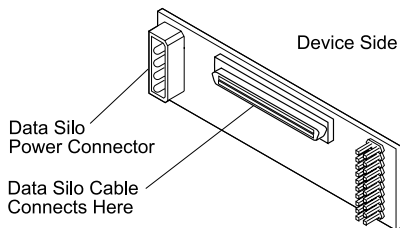
Appendix B - Drive Interface Adapter Options

StorCase provides several drive interface adapter options that permit various DS320/drive connector combinations. Contact StorCase for additional ordering information.



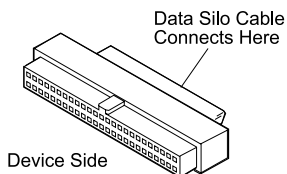
DX100-WTN

Adapts 16-bit, 68-pin SCSI Wide device to 8-bit, 50-pin SCSI Narrow cable connector.



DX100-SWC

Adapts 16-bit, 68-pin SCSI Wide cable connector to Single-Connect (SCA) drive interface connector (includes power, ID selection and device activity connections). Also supports Ultra2 and Ultra160 (LVD) interfaces.



DX100-NTW

Adapts 8-bit, 50-pin SCSI Narrow device to 16-bit, 68-pin SCSI Wide cable connector.

0552u

Figure B-1: Drive Interface Adapters

Reader's Comments

Please take a few moments when your computer system is up and running to send us your ideas and suggestions for improving our products and documentation. Did the installation go smoothly for you? Are there any changes you would like us to make, either with the hardware itself, or with the installation instructions? Everyone at StorCase Technology is working toward the goal of providing you with the highest quality, most cost effective, products available on the market, and we need your comments to guide our efforts. We look forward to hearing from you soon!

Date: _____

Your Name: _____

Address: _____

Telephone: () _____

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